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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/579,389	06/14/2006	Takafumi Suzuki	2006_0741A	6578

513 7590 09/02/2010  
WENDEROTH, LIND & PONACK, L.L.P.  
1030 15th Street, N.W.,  
Suite 400 East  
Washington, DC 20005-1503

EXAMINER
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LACLAIR, DARCY D

ART UNIT	PAPER NUMBER
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1796

NOTIFICATION DATE	DELIVERY MODE
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09/02/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ddalecki@wenderoth.com  
coa@wenderoth.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,389	<b>Applicant(s)</b> SUZUKI ET AL.	
	<b>Examiner</b> Darcy D. LaClair	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 12, 18, 20-24, 31 and 32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12, 18, 20-24, 31 and 32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

### DETAILED ACTION

1. All outstanding rejections, except for those maintained below are withdrawn in light of the amendment filed on **6/30/2010**.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

The new grounds of rejection set forth below are necessitated by applicant's amendment filed on **6/30/2010**. In particular, **Claim 1** has been amended to recite  $A^{n-}$  is  $\text{SiO}(\text{OH})_3^-$ ,  $\text{SiO}_4^{4-}$ , or a mixture thereof, and that the composition comprises 0.1 to 10 parts by weight of hydrotalcite. This incorporates a limitation from previous Claim 19, and narrows the Markush group by eliminating 3 alternatives. Thus, this represents a new set of limitations not present at the time of the preceding office action. New Claims 31 and 32 have been added. New Claim 31 is supported by previous Claim 11. These Claims were not present in the claims at the time of the preceding Office Action. Thus, the following action is properly made **FINAL**.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claim 32** is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one

Art Unit: 1796

skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

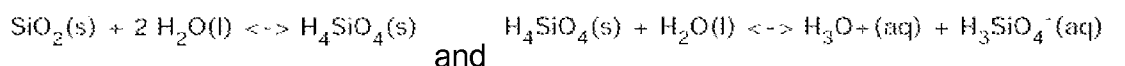
Claim 32 requires that the X-ray diffraction pattern of calcium hydroxide shows only the pattern of calcium hydroxide. Applicant has directed attention to page 19 lines 2-4 of the specification for support, however this example shows a specific amount of hydrated silicon dioxide of a particular formula (Carplex #80), which is not explicitly detailed, except that the  $\text{SiO}_2$  content is 95%, having been reacted with a specific amount of quick lime (Calceed) to cause a slacking reaction. This is done at specific temperature and time, and then filtered. Further, the reaction is a particular type of reaction, ie. slacking. The specificity of this example is not commensurate in scope with the broadly recited formula of the composition, where the A, n, and x value can vary significantly. Furthermore, the process dictated by Claim 1 requires a water soluble calcium salt with an aqueous solution of an alkali metal hydroxide in the presence of a silicon based compound. Examples 1 to 3 appear to have a hydrated silicon dioxide (silicon based compound) and quick lime (calcium oxide). This is not a calcium salt, but rather a calcium oxide, and there does not appear to be an alkali metal hydroxide present. Thus the example is not consistent with the current claim language.

### ***Claim Rejections - 35 USC § 103***

3. **Claims 12, 18, 21, 24 and 31-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Enoki et al. (WO 03/010091)** with evidence from **Silicone (Si) and Water (Lenntech, 1989)**

The rejection is adequately set forth in **paragraph 3** of the office action mailed **12/31/2010**, and is incorporated here by reference.

**With respect to amended Claim 12**, Enoki teaches CaOH-silicate particles prepared by blending and heating CaOH and amorphous silicic acid, followed by dry solidification. (See par [0031]) This reaction terminates with a pH of 12.8, which is highly basic. Amorphous silicic acid is  $\text{SiO}_2 \cdot n\text{H}_2\text{O}$ , and when in an aqueous solution, the silica will react with water to form -OH groups pendant to the  $\text{SiO}_2$ . This will cause metasilic and orthosilic (see below) acid to be formed:

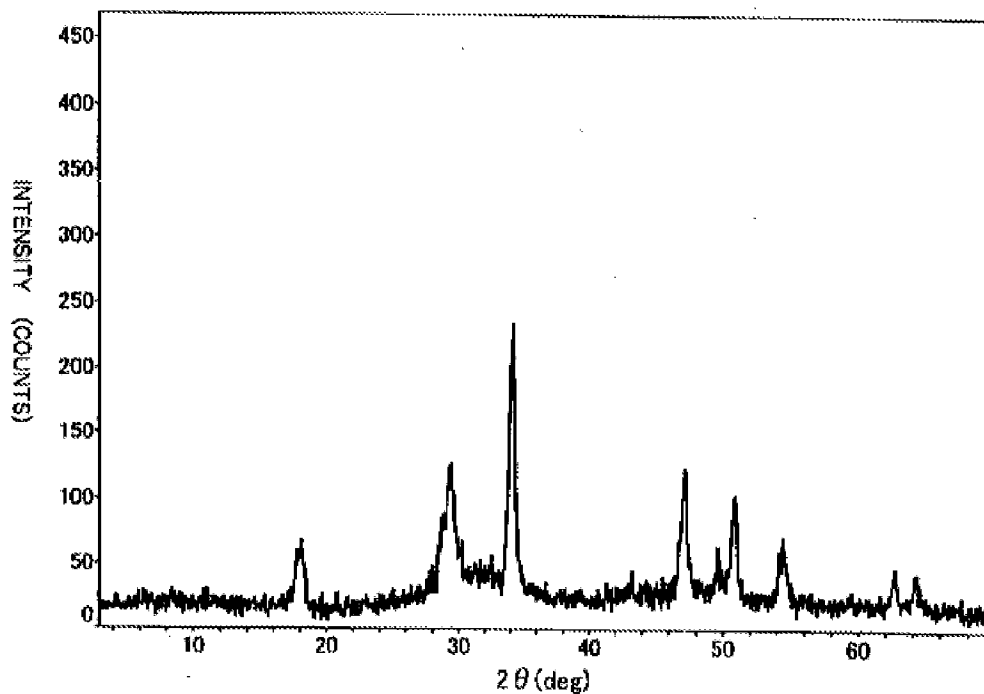


or  $\text{SiO}(\text{OH}_3)^-$ . (See Lenntech) Furthermore, additional dissociation of the hydrogen due to the basic conditions will yield species such as  $\text{SiO}_2(\text{OH})_2^{2-}$  and  $\text{SiO}_4^{4-}$ . Further, Enoki teaches that other stabilizers can be used in combination with the calcium type silicate particles, (see par [0097]) and then teaches other stabilizers, such as hydrotalcite. (See par [0220]) It would be obvious to one of ordinary skill in the art that if Enoki teaches the use of additional stabilizers with the calcium type silicate particles, and then teaches specific examples of those additional stabilizers, to use one of those specific stabilizers as an additional stabilizer.

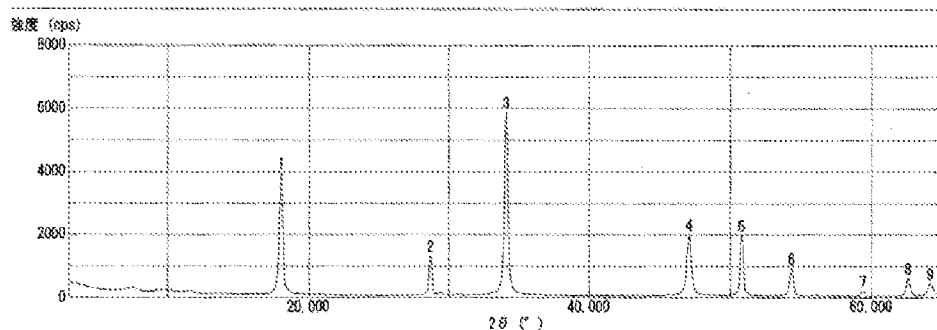
**With respect to new Claim 31**, Enoki teaches that the alkaline earth metal is treated with a silicate (silicon based compound) to form a surface layer of alkaline-earth metal hydroxide. (See abstract) This forms a layer on the surface of the particles which improves stability. (See par [0013])

With respect to **new Claim 32**, Enoki shows an X-ray diffraction image of the powder. (See Fig. 6)

Fig. 6



Compare to applicant's submitted Xray diffraction pattern for calcium hydroxide.



The Examiner takes the position that the same peaks are observed, with the exception of an extra peak at position 7 in applicant's diffraction pattern, however this is sufficiently small that may simply be below the detection limit in Enoki's calcium

Art Unit: 1796

hydroxide product. Thus the examiner takes the position that there does not appear to be a structural difference between applicant's calcium hydroxide and Enoki's calcium hydroxide, and that only the diffraction pattern of calcium hydroxide is shown.

4. **Claims 20 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Enoki et al. (WO 03/010091)** in view of **Katsuki et al. (US 6,291,570)** with evidence from **Silicone (Si) and Water (Lenntech, 1989)**

The rejection is adequately set forth in **paragraph 4** of the office action mailed **12/31/2010**, and is incorporated here by reference.

5. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Enoki et al. (WO 03/010091)** in view of **Katsuki et al. (US 6,291,570)**, **Miyata et al. (US 3,879,525)** and **Kooli et al. (J. Mat. Sci, 1993)** with evidence from **Silicone (Si) and Water (Lenntech, 1989)**

The rejection is adequately set forth in **paragraph 5** of the office action mailed **12/31/2010**, and is incorporated here by reference.

6. **Claims 12, 18, 21, 24 and 31-32** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Enoki et al. (WO 03/010091)** in view of **Katsuki et al. (US 6,291,570)** and **Miyata et al. (US 6,592,834)** with evidence from **Silicone (Si) and Water (Lenntech, 1989)**

The rejection is adequately set forth in **paragraph 6** of the office action mailed **12/31/2010**, and is incorporated here by reference.

The discussion of **Enoki** and **Silicone**, above in **paragraph 3**, is incorporated here by reference.

**With regard to amended Claim 12 and new Claims 31 and 32**, attention is directed to the discussion of Claims 12, 31 and 32, above in paragraph 3.

### ***Response to Arguments***

7. Applicant's arguments filed **6/30/2010** have been fully considered. Specifically, applicant argues

(A) The rejection of Claim 30 has been rendered moot by the cancellation of the claim.

(B) Applicant's disagree with the Examiner's assertion that Enoki teaches hydrotalcite as a stabilizer to be used in combination with the silicate particles. Enoki describes a number of stabilizers which may be used in combination with the basic silicate particles of the invention, and hydrotalcite is not there. See paragraphs [0097]-[0121] of US '660, which is the English translation. Enoki describes hydrotalcite in paragraph [0220] but uses hydrotalcite alone, not in combination with calcium type basic silicate. Thus Enoki does not teach or suggest hydrotalcite as a stabilizer, but rather as a comparative agent.

(C) Applicants assert the composition of the present invention shows superior thermal stability against coloring and time to blacked, demonstrated by examples 87 and 93. As is evident from the table, the combination of the calcium hydroxide solid



Art Unit: 1796

solution and hydrotalcite shows better thermal stability than hydrotalcite alone. Since Enoki doesn't teach the combination of hydrotalcite with the calcium hydroxide, the reference does not recognize these superior results.

(D) The An- of applicant's recited formula is contained in calcium hydroxide as a solid solution, as recited on page 5, line 27 of the specification. Although Example 23 contains 3.0% by weight of  $\text{SiO}_2$ , there is no peak on the X-ray diffraction chart to indicate its presence. Rather, only the presence of the calcium hydroxide is shown on the X-ray diffraction chart. In the teachings of Enoki, an alkaline earth metal silicate is formed on the surface of the hydroxide particle in Enoki, as demonstrated in paragraph [0079] of the reference. Thus, the structure of applicant's calcium hydroxide is different than Enoki's calcium hydroxide.

(E) The secondary references are relied upon for limitations of dependant claims, however these references do not remedy the above discussed deficiencies of Enoki.

8. **With respect to argument (A)**, applicant's arguments have been considered and the objection has been withdrawn *in light of applicant's amendment* cancelling Claim 30.

**With respect to argument (B) and (C)**, applicant's arguments have been considered but are **not persuasive**. Enoki teaches that other stabilizers can be used in combination with the calcium type silicate particles, (see par [0097]) and then teaches other stabilizers, such as hydrotalcite. (See par [0220]) It would be obvious to one of

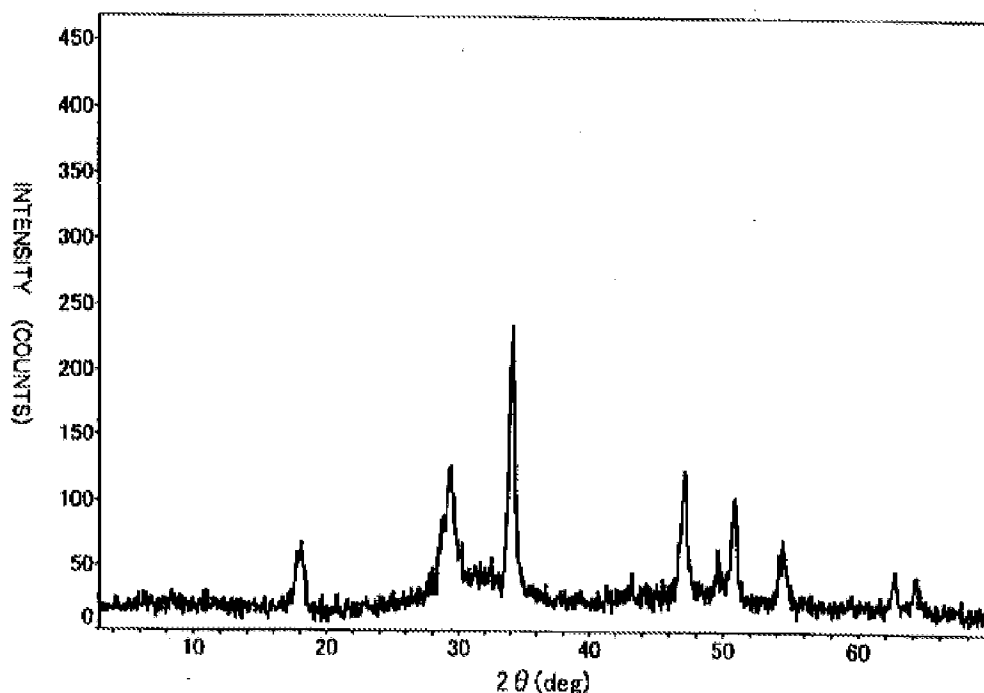
Art Unit: 1796

ordinary skill in the art that if Enoki teaches the use of additional stabilizers with the calcium type silicate particles, and then teaches specific examples of those additional stabilizers, to use one of those specific stabilizers as an additional stabilizer. That these stabilizers are used alone as a comparative example does not detract from the suggestion of the prior art to use a second stabilizer in combination with the primary calcium type silicate compound of the invention. As Enoki teaches a combination of stabilizers, applicant's argument with respect to the superiority of the combination of these components is moot.

**With respect to argument (D)**, applicant's arguments have been considered but are **not persuasive**. First, in the independent claim and all claims except Claim 32, there is nothing that indicates the structural features to which applicants refer. Thus applicant's argument is not relevant for Claims 12, 18, 20-24 and 31. With respect to Claim 30 which does describe an X-ray diffraction pattern having only the pattern of calcium hydroxide, the teachings of Enoki with respect to alkaline earth metal silicate formed on the surface of the hydroxide particle, (par [0079]) this is consistent with applicant's surface treating as previously recited in Claim 11, and now recited in Claim 31, and does not appear to be a feature that would be noted in the calcium hydroxide itself. Furthermore, the process described by Enoki is consistent with the process described by applicant in the specification. Specifically, applicant teaches, for the product having only a pattern of calcium hydroxide in the X-ray diffraction pattern, water and hydrated silicon dioxide are provided, and the water temperature is elevated to 60°C. Then quick lime (calcium oxide) is added to the mixture to cause a slacking

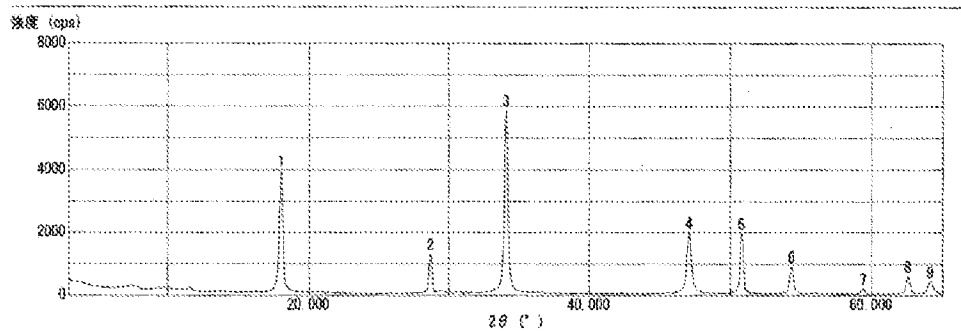
Art Unit: 1796

reaction. Then the mixture is agitated at 90°C and then cooled, sieved, filtered, dried and ground. (See specification p. 17-18) Enoki teaches that slacked lime (par [0084]) and the silicic acid are wet mixed in aqueous solution and heated (see par [0091]) under mild stirring (see par [0082]) where the temperature is in a range from 80°C to 95°C. (See par [0091]) Then the slurry obtained is dry-solidified. (See par [0092]) This is exemplified in paragraphs [0173]-[0178], and an X-ray diffraction image of the powder is shown. (See Fig. 6)

**Fig. 6**

Compare to applicant's submitted Xray diffraction pattern.

Art Unit: 1796



The Examiner takes the position that the same peaks are observed, with the exception of an extra peak at position 7 in applicant's diffraction pattern, however this is sufficiently small that may simply be below the detection limit in Enoki's calcium hydroxide product. Thus the examiner takes the position that there does not appear to be a structural difference between applicant's calcium hydroxide and Enoki's calcium hydroxide.

**With respect to argument (E)**, attention is directed to the discussion of Enoki's alleged deficiencies, above, and to the rejection set forth for **Claims 1, 11-12, 17-19, 21, 24-26, 27, 28, 29 and 30** over **Enoki et al. (WO 03/010091)** in view of **Katsuki et al. (US 6,291,570)** and **Miyata et al. (US 6,592,834)** with evidence from **Silicone (Si) and Water (Lenntech, 1989)** which presents a combination of Enoki, Katsuki, and Miyata for the independent Claims. Not only the merits of the rejection over Enoki, but also the merits this rejection apply as well.

### **Conclusion**

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Darcy D. LaClair whose telephone number is (571)270-5462. The examiner can normally be reached on Monday-Friday 8:30-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Milton Cano can be reached on 571-272-1398. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Milton I. Cano/  
Supervisory Patent Examiner, Art Unit 1796

Darcy D. LaClair  
Examiner  
Art Unit 1796

/DDL/